SESSION 1. SPACECRAFT & PROGRAM UPDATES

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Spacecraft and ACTS Program Updates

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Advanced Communications Technology Satellite
ACTS
NASA Lewis Research Center
Cleveland, Ohio

Lewis Research Center
Cleveland OH

ADVANCED COMMUNICATIONS TECHNOLOGY SATELLITE (ACTS)

- Original goal to maintain US pre-emminence in communications satellite technology
- Experiments began December 6, 1993.
- Initial 2 year mission extended (4 yr. design life) - sixth year now underway!
- Over 150 organizations involved in 92 experiments; 81 demonstrations to various audiences.

Launched September 12, 1993 aboard STS 51- Discovery.

Lewis Research Center
Cleveland, OH

KEY ACTS TECHNOLOGIES

High Gain, Fast Hopping Spot Beams

- EIRP >64 dB
- G/T >20 dB/K
- Frequency Reuse >> 4

Onboard Processing& Switching

- Baseband Switching at 64 kbps circuit level
  - Max throughput of 220 Mbps
  - Full mesh, single hop connectivity
- Wideband Switch Matrix of 3 channels at 900 MHz each

Ka-Band

- **30/20** GHz RF spacecraft& earth station components
- Adaptive rain fade compensation
  - Propagation measurements to characterize band
  - Only currently available 30/20 GHz satellite testbed in Us.

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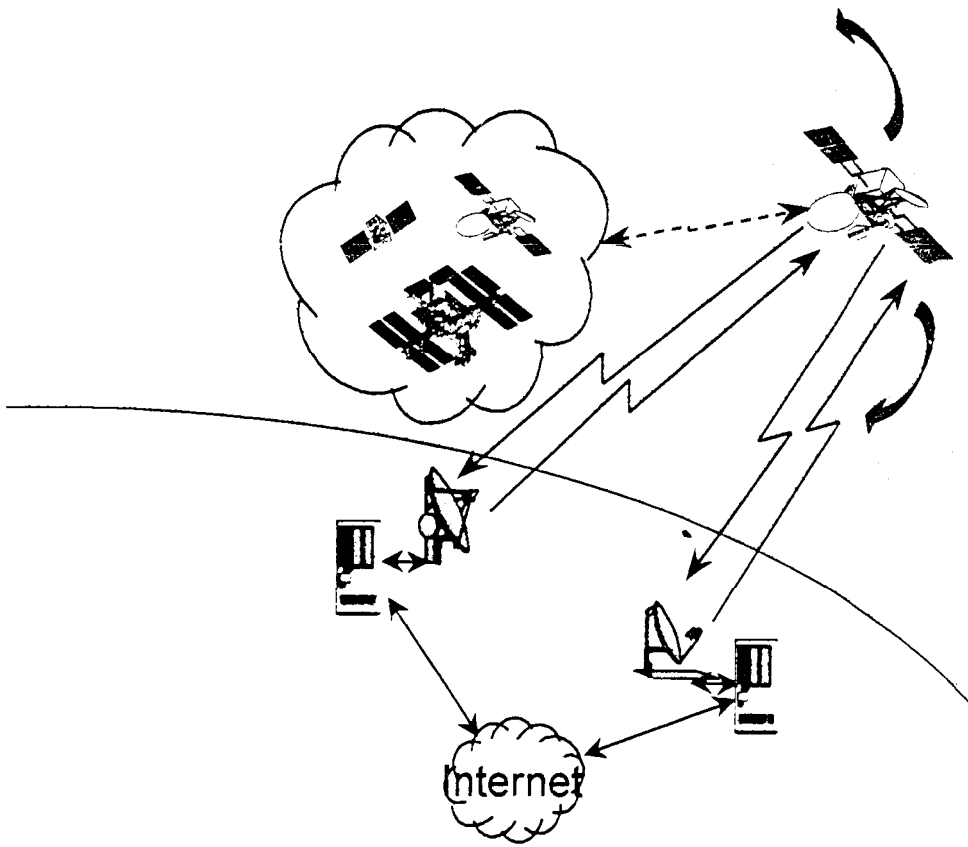
EXPERIMENT AREAS



- Transition to commercial assets
- Networking and interoperability
- Inclined orbit operations
- Ka-band technology